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CLAIMS

[Claim(s)]
[Claim 1] the duct which follows a fan from a radial fan (a sirocco fan is included) and the cooled section in the projector equipment which carries out expansion projection of the image of a display device -- having -- cooling from the cooled section -- a style -- a duct -- a passage -- a radial fan -- absorbing -- having -- the exhaust-port shell exterior -- exhausting -- having -- things -- the feature -- carrying out -- a projector -- equipment .
[Claim 2] Projector equipment according to claim 1 characterized by preparing an exhaust port ahead [projector set].
[Claim 3] Projector equipment according to claim 1 characterized by preparing an open air incorporation mouth in addition to the base of a projector set.
[Claim 4] Projector equipment characterized by providing the following. Case. The cooling air incorporation mouth which was prepared in the case and minded the filter. The sirocco fan arranged inside a case. The exhaust port which takes out the cooling duct led to the account sirocco fan of back to front which let the object which has cooling air from the inlet port of the sake for [which was prepared in the aforementioned base that the lamp, the beam splitter and the liquid crystal panel which have been arranged at the base inside a case, and the aforementioned lamp a beam splitter and a liquid crystal panel should be made applicable to cooling and it should cool] cooling, and the inlet port prepared in the aforementioned base cooled pass, and the exhaust air from the aforementioned sirocco fan to the exterior
[Claim 5] Projector equipment according to claim 4 characterized by combining thermally the printed circuit board to which the air intake duct connected with the cooling air incorporation mouth was further provided, and the electronic circuitry attached to this air intake duct.
[Claim 6] Projector equipment according to claim 4 which prepares fields other than the base of a case, and an exhaust port for a cooling air incorporation mouth in a front face, and is characterized by things.

[Translation done.]

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : NEC CORP

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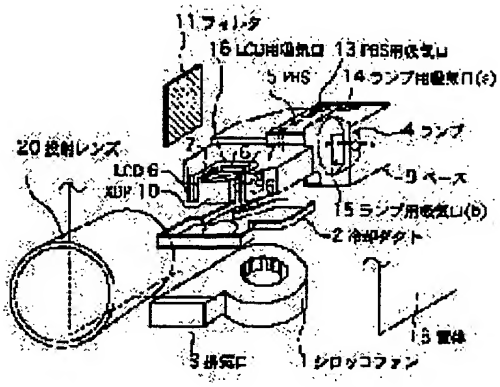
(54) PROJECTOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a projector excellent in maintainability in which uncomfortable hot air is not blown to a person when the projector is used and an air filter can be replaced without removing the projector even when it is installed permanently by discharging cooling air for the projector to the front of the projector and mounting a suction filter on the side face of the projector.

SOLUTION: The projector comprises a Sirocco fan 1 and a cooling duct 2 extending from the parts 4-8 to be cooled to the fan. Cooling air from the parts 4-8 passes through the cooling duct 2, flows in the direction being sucked by the Sirocco fan 1 and discharged from an air outlet 3 made in front of the projector to the outside.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] Especially this invention relates to the cooler style of the liquid crystal projector equipment which uses the liquid crystal panel of two or more sheets about projector equipment.
[0002]
[Description of the Prior Art] Conventionally, two or more axial fans are used for cooling of projector equipment. The fan 23 who shows this example and incorporates a cooling wind through an air filter in the display device section from the exterior, and the fan 19 who exhausts the warm air in equipment were required for drawing 5 . Moreover, the still more auxiliary fan was used depending on the case. Because of such structure, as for the fan for exhaust air (ventilating fan), it was common to have been arranged near the light source which becomes an elevated temperature, and the exhaust air direction of the warm air on the structure of projector equipment and inside equipment was back or the side. Since the lamp for projectors attaches this and a life changes with postures, when the life of a lamp is taken into consideration, arrangement of a lamp and a lens is because it is decided mostly. Although there was also equipment ahead exhausted with the equipment which used the axial fan rarely, when it was used where equipment is leaned in order to make the position of a projection screen high, it had had a bad influence on the life of a lamp. Moreover, it was difficult to confuse a flow with the parts holding a display device etc., in order that the flow of the cooling style of the display device section may blow a cooling wind into a slit depending on a fan's hand of cut, when an axial fan is used, and to pass a cooling wind uniformly on the front face of a display device.
[0003]
[Problem(s) to be Solved by the Invention] The 1st trouble of the conventional technology is that it was not completed structurally that that there is obstruction human being when using it exhausts ahead [few]. The light source lamp with which the reason is used now is for the posture at the time of lighting to have restrictions, and limit the installation direction of a lamp. For this reason, it is because the temperature of the parts in equipment becomes high in this case although it is the ventilating fan of the front face of equipment and hot blast with the lamp of equipment back must be exhausted, in order to be unable to arrange a lamp ahead of equipment in order to maintain an original lamp life, but to exhaust ahead.
[0004] The 2nd trouble is prepared in the equipment base on which workability's, such as exchange, has the bad position of the air filter which incorporates the open air, and possibility there being dust etc. is high. The reason has high possibility that there is dust, such as dust, most at the time of installation, and is because equipment must be removed from a ceiling to the degree of filter exchange when using it by ceiling-hanging ******, establishing permanently. Moreover, paper, matting, etc. in a base may be drawn close and an open air incorporation mouth may be closed. With the equipment which used the axial fan, the open air is inhaled through the filter which detached on the outside a little and was prepared in it by the fan prepared in the base of display devices, such as a liquid crystal panel. This is because a display device is weak with heat and cooling is required first. An axial fan is because it is difficult for a pressure to completely arrange a filter in another position with a fan compared with a radial fan for a low reason.
[0005] The 3rd trouble is that it is difficult to make the cooling wind on a display device uniform for upgrading of a projection screen. Since, as for the reason, the flow of the cooling style of the display device section has an inclination near the direction of a vertical angle of a display device front face depending on a fan's hand of cut when an axial fan is used, the rate of flow is the shell which a low portion tends to generate. Moreover, it is because there is a portion into which a flow is confused with the parts holding a display device etc., and a cooling wind cannot flow easily in order to spray a cooling wind on a slit.
[0006] Therefore, in case the purpose of this invention is used by the presentation, it is that warm air is exhausted from the front with little people, and the man presenter near the equipment offers the projector equipment become

unnecessary to expose to unpleasant warm air.
[0007] Moreover, even if other purposes of this invention use it, establishing permanently, they are offering the projector equipment which filter exchange of was completed in the state it having installed, at the time of filter exchange, and raised maintainability.
[0008]
[Means for Solving the Problem] In order that the projector equipment of this invention may solve the above-mentioned problem, a radial fan (sirocco fan) (1), The cooled section (4) It has the cooling duct (2) which follows a fan from - (8). And the cooling wind from cooled section (4) - (8) flows in the direction absorbed by the sirocco fan (1) through a cooling duct (2), and is characterized by being exhausted by the equipment exterior from the exhaust port (3) prepared ahead [equipment].
[0009] In this invention, since a cooling wind is absorbed and exhausted by the sirocco fan (1) through a cooling duct (2), a cooling wind does not raise the temperature of other parts with any equipment layouts. For this reason, it can exhaust ahead reasonable from a front exhaust port (3). Moreover, the open air can be incorporated, even if the interior of equipment becomes negative pressure and it prepares a filter (11) in addition to the base of equipment by using it towards absorbing a cooling wind from the cooled section to a fan using a sirocco fan with a high static pressure (1).
[0010] Furthermore, the shield (12) to which cooling efficiency is reduced is unnecessary, without detrimental ultraviolet rays leaking out of equipment, since there is no fan near the lamp (4). Moreover, since a sirocco fan is used in the suction direction, a slit can also pass a cooling wind by few resistance, and can make the flow of a display device front face uniform.
[0011]
[Embodiments of the Invention] [Explanation of composition] Next, the gestalt of operation of this invention is explained in detail with reference to a drawing. It is drawing showing the flow of cooling air [in / the gestalt of operation of drawing 1 / drawing 1 and / in drawing 2]. / the gestalt of 1 operation
[0012] Reference of drawing constitutes the gestalt of operation of this invention from the base 9 in which each optic is attached, a cooling duct 2 attached in the base, and a sirocco fan 1 attached in the base of a cooling duct. A lamp 4, the polarizer beam splitter (henceforth PBS) 5, a liquid crystal panel (henceforth LCD) 6, a polarizing plate 7, an analyzer 8, the cross dichroic prism (henceforth XDP) 10, and other mirrors (not shown) are attached in the base 9.
[0013] drawing 1 -- and -- drawing 2 -- referring to -- if -- a filter -- 11 -- a passage -- a case -- 18 -- inside -- incorporating -- having had -- cooling -- a wind -- each -- ******** -- preparing -- having had -- PBS -- ** -- an inlet port -- 13 -- a lamp -- ** -- an inlet port -- (-- a --) -- 14 -- a lamp -- ** -- an inlet port -- (-- b --) -- 15 -- LCD -- ** -- an inlet port -- 16 -- from -- absorbing -- having -- In case the cooling wind absorbed by each inlet port is absorbed, it also cools the electrical part (not shown) in a passage portion.
[0014] Drawing 3 shows the gestalt of other operations of this invention, and the direction of exhaust air is changed into the side, and it changes the direction of inhalation of air into a front face, respectively. In this invention, it can exhaust in the arbitrary directions by changing the installation direction of a sirocco fan 1. Moreover, the position of a filter 11 is also arbitrarily changeable. The sirocco fan 1 and the exhaust port 3 are connected by the jet pipe 17.
[0015] Drawing 4 is the example of a gestalt of other operations which formed the air intake duct 21 from the filter 11. By controlling the flow of inhalation of air, the efficiency flow said to elevated-temperature parts can be made from low-temperature parts. In the example of a gestalt of this operation, a printed circuit board 22 is arranged in an air intake duct 21, and it has structure which the open air cools a direct printed circuit board, is incorporated by each inlet port after that, and cools the cooled section.
[0016] Since passage can be made to become independent for every cooling parts by using an air intake duct, by inhaling directly the open air which does not let a filter pass, a draft resistance can be lowered to cooling of parts without the influence of dust etc., and cooling efficiency can be raised to it. Arranging in an air intake duct 21 cannot pass over a printed circuit board 22 to an example, but it can also arrange it besides an air intake duct 21.
[0017]
[Effect of the Invention] The 1st effect of this invention is being able to exhaust ahead reasonable. Since the reason is absorbed by the sirocco fan through a cooling duct and a cooling wind is exhausted, a cooling wind does not raise the temperature of other parts with any equipment layouts.
[0018] The 2nd effect is being able to form a filter 11 in addition to the base of equipment. The reason can incorporate the open air, even if the interior of equipment becomes negative pressure and forms a filter 11 in addition to the base of equipment by using it towards absorbing a cooling wind from the cooled section to a fan using the sirocco fan 1 with a high static pressure.
[0019] The 3rd effect is being able to make uniform the flow of the cooling style [a display device front face]. Since a sirocco fan 1 is used for the reason in the suction direction, a slit can also pass a cooling wind by few resistance, and it

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